

## CLAIMS

What is claimed is:

- 1    1.    A method for manufacturing a magnetic structure on a magnetic write head,  
2        comprising:  
3        constructing a photoresist layer having a trench;  
4        depositing a magnetic material into the trench;  
5        removing the photoresist layer;  
6        depositing a dielectric material;  
7        performing a chemical mechanical polish to remove a portion of said dielectric  
8                material;  
9        performing a reactive ion mill procedure to remove a sufficient amount of  
10               dielectric material to expose said magnetic material.
  
- 1    2.    A method as in claim 1 further comprising forming a magnetic pole structure over  
2        the exposed magnetic material.
  
- 1    3.    A method as in claim 1 wherein said constructing a photoresist trench further  
2        comprises:  
3                depositing photoresist; and  
4                performing a deep ultraviolet photolithography on the photoresist.

1 4. A method as in claim 1, wherein said depositing said magnetic material comprises  
2 electroplating.

1 5. A method as in claim 1, wherein said depositing said magnetic material comprises  
2 electroplating said magnetic material, and terminating said electroplating before said  
3 magnetic material reaches an upper opening in said trench formed in said photoresist  
4 layer.

6. A method as in claim 1, wherein said trench includes a flared portion, and  
wherein said depositing said magnetic material comprises electroplating said magnetic  
material, and terminating said electroplating before said magnetic material reaches said  
flared portion formed in said trench.

1 7 A method as in claim 1, wherein said magnetic material comprises NiFe.

1 8. A method as in claim 2, wherein said magnetic pole structure comprises NiFe.

1 9. A method as in claim 1, wherein said reactive ion milling procedure is performed  
2 sufficiently to form a recession of between 0 and 0.3 microns between said magnetic  
3 structure and an upper surface of said alumina.

1 10. A method as in claim 1 wherein said magnetic structure has a width sigma of less  
2 than 10 nanometers.

1 12. A method as in claim 1 wherein said trench formed in said photoresist layer has a  
2 width sigma of less than 10 nanometers up to a location where said magnetic  
3 material deposition will terminate.

1 13. A method as in claim 1 wherein said dielectric material is alumina ( $\text{Al}_2\text{O}_3$ ).

1 14. A method as in claim 1 wherein said magnetic structure is a P3 pedestal of a  
2 magnetic pole.

1 15. A method as in claim 1 wherein said reactive ion mill is performed in an  
2 atmosphere comprising  $\text{CHF}_3$ .

1 16. A method as in claim 1 wherein said reactive ion mill is performed sufficiently to  
2 create a recess between an upper surface of said magnetic structure and an upper  
3 surface of said dielectric material.

1 17. A method as in claim 1 wherein said reactive ion mill is performed sufficiently to  
2 create a recess between an upper surface of said magnetic layer and an upper surface of  
3 said dielectric layer wherein said recess is between .1 and .3 microns inclusive.

1 18. A method as in claim 1 wherein said reactive ion mill is performed sufficiently to  
2 create a recess between an upper surface of said magnetic layer and an upper surface of  
3 said dielectric layer wherein said recess is about .3 microns.

1 19. A structure formed on a magnetic write head, comprising:  
2 a magnetic structure having an upper surface and having first and second lateral  
3 sides and having a width measured between said lateral sides and having a height  
4 measured perpendicular thereto;  
5 a dielectric layer contacting said first and second lateral sides of said magnetic  
6 structure and extending laterally therefrom and having an upper surface; and  
7 wherein  
8 said upper surface of said dielectric layer is recessed from said upper surface of  
9 said magnetic structure and said upper surface of said dielectric layer.

1 20. A structure as in claim 19 wherein said recess is between .1 and .5 microns.

1 21. A structure as in claim 19 wherein said recess is about .3 microns.